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| 10/661,752 | 09/12/2003 | Darwin Mitchel Hanks | 200313596-1 | 8149 |

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| EXAMINER | |
|---|---|
| LAMB, CHRISTOPHER RAY | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2627 | |

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| 01/25/2008 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/661,752 | HANKS, DARWIN MITCHEL | |
| | Examiner | Art Unit | |
| | Christopher R. Lamb | 2627 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *30 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-5,9,11,13-18,23,25-29,34-39,43 and 45-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,9,11,13-18,23,25-29,34-39,43 and 45-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

1. In view of the appeal brief filed on October 30th, 2007, PROSECUTION IS HEREBY REOPENED. New grounds of rejection set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 45-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutsui et al. (US 5,808,983) in view of Kusumoto et al. (US 2002/0105865).

Regarding claim 45:

Tsutsui discloses:

A system for establishing a baseline signal for application to an actuator within an optical disk drive to focus optics on an optical disk within the optical disk drive (abstract: Tsutsui refers to the baseline position as the "optimum focus offset position;" that it involves a signal is shown by, for example, column 1, lines 59-65), the system comprising a baseline actuator positioning routine configured to:

apply actuator control signals to the actuator to step the actuator through a full range of focus (column 10, lines 34-50);

obtain an RF signal at each step (column 14, lines 25-45; Fig. 7);

identify one of the obtained RF signals (column 10, lines 34-50); and

set the baseline actuator control signal according to an applied actuator control signal which resulted in the identified one of the obtained RF signals (column 14, lines 50-65: "an optimum point can be...set").

Tsutsui does not disclose:

Wherein the RF signal is a SUM signal, the SUM signal being a sum of signals received from a plurality of focus sensors.

Kusumoto discloses:

An RF signal wherein the RF signal is a SUM signal, the SUM signal being a sum of signals received from a plurality of focus sensors (paragraph 72).

It would have been obvious to one of ordinary skill in the art to include in Tsutsui wherein the RF signal is a SUM signal, the SUM signal being a sum of signals received from a plurality of focus sensors.

The rationale is as follows:

Tsutsui discloses measuring the RF signal but does not disclose how the RF signal is obtained. Obtaining the RF signal is necessary for implementing the system of Tsutsui. Kusumoto discloses a means of obtaining an RF signal: it's obvious to combine these teachings in order to implement Tsutsui's sytem, because one of ordinary skill could have combined them with predictable results.

Regarding claim 46:

Tsutsui discloses (Fig. 12) a control circuit 17: this is a processor-readable medium comprising processor-executable instructions for focusing optics. All other limitations positively recited have already been discussed with regards to claim 45.

Regarding claim 47:

This is a method claim corresponding to claim 45. This claim is met when the system of Tsutsui operates.

Regarding claim 48:

This claim is similar to claim 45 and is similarly rejected, as Tsutsui discloses means to implement the system of Tsutsui (for example, Fig. 12).

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutsui in view of Kusumoto, and further in view of Fennema (US 5,164,932).

Tsutsui in view of Kusumoto discloses a system as discussed in the rejection of claim 45 above.

Tsutsui in view of Kusumoto does not disclose "wherein the baseline actuator positioning routine is configured to set the baseline actuator control signal to

approximately 75% of the actuator control signal which resulted in the maximum of the obtained SUM signals."

Instead, Tsutsu in view of Kusumoto i sets it to the signal which resulted in the maximum, as discussed above.

Fennema discloses that a baseline actuator positioning routine should be configured to set the baseline actuator control signal to approximately 75% of the actuator control signal which resulted in the maximum of the obtained SUM signals (Fennema gives the reasons in, for example, column 1, lines 58-67; the "approximately 75%" value is apparent from Fig. 3, where points 36 and 37 are the desired SUM signal, or readback signal, levels).

It would have been obvious to one of ordinary skill at the time of the invention to include in Tsutsui in view of Kusumoto wherein the baseline actuator positioning routine is configured to set the baseline actuator control signal to approximately 75% of the actuator control signal which resulted in the maximum of the obtained SUM signals.

The motivation would have been eliminate the problem disclosed by Fennema (column 1, lines 58-67): a point at the maximum level has a negative effect in the case of slight defocusing, whereas a lower point does not.

5. Claims 1, 4, 5, 11, 14, 17, 18, 23, 25, 28, 29, 35, 38, 39, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hajjar et al. (US 5,742,573) in view of Tsutsui, and further in view of Kusumoto.

Regarding claim 1:

Hajjar discloses a system for establishing a baseline signal for application to an actuator within an optical disk drive to focus optics on an optical disk within the optical disk drive (abstract), the system comprising:

an error term generator configured to generate an error term (column 5, lines 1-11, where the details are similar to column 4, lines 15-18);

an adaptation coefficient configured to regulate a rate at which the error term modifies an actuator control signal (column 5, lines 1-11, where the details are similar to column 4, lines 53-57: if the feedforward signal is averaged with previous iterations there must be a coefficient configured to regulate the rate at which the error term modifies it); and

an actuator control signal generator to generate the actuator control signal, wherein the actuator control signal is a function of a prior actuator position, the error term and the adaptation coefficient (column 5, lines 1-11, where the details are similar to column 4, lines 46-57).

Hajjar does not disclose wherein the baseline actuator positioning routine is configured to "apply actuator control signals to the actuator to step the actuator full a full range of focus; obtain a SUM signal at each step, the SUM signal being a sum of signals received from a plurality of focus sensors; identify one of the obtained SUM signals; and set the baseline actuator control signal according to an applied actuator control signal which resulted in the identified one of the obtained SUM signals."

Tsutsui discloses that it is necessary to set a focus offset signal in order to achieve an optimum focusing condition (column 1, lines 59-65). Tsutsui discloses that to set this focus offset, the focus offset positioning routine must be configured to:

apply actuator control signals to the actuator to step the actuator through a full range of focus (column 10, lines 34-50);

obtain a RF signal at each step(column 14, lines 25-45);

identify one of the obtained RF signals (column 10, lines 34-50); and

set the baseline actuator control signal according to an applied actuator control signal which resulted in the identified one of the obtained RF signals (column 14, lines 50-65: "an optimum point can be...set")

Therefore, it would have been obvious to one of ordinary skill in the art to include in Hajjar the configuration taught by Tsutsui, including all the steps listed above. The motivation would have been to achieve an optimum focusing condition, as taught by Tsutsui (Hajjar's apparatus requires focusing on the disc in order to obtain the values it uses in the feed forward signal; thus optimum focusing conditions are necessary for Hajjar's apparatus).

Hajjar in view of Tsutsui does not disclose:

That the RF signal is a SUM signal, the SUM signal being a sum of signals received from a plurality of focus sensors.

Kusumoto discloses:

An RF signal wherein the RF signal is a SUM signal, the SUM signal being a sum of signals received from a plurality of focus sensors (paragraph 72).

It would have been obvious to one of ordinary skill in the art to include in Hajjar in view of Tsutsui wherein the RF signal is a SUM signal, the SUM signal being a sum of signals received from a plurality of focus sensors.

The rationale is as follows:

Tsutsui discloses measuring the RF signal but does not disclose how the RF signal is obtained. Obtaining the RF signal is necessary for implementing the system of Tsutsui, and therefore necessary to implement Hajjar in view of Tsutsui. Kusumoto discloses a means of obtaining an RF signal: it's obvious to combine these teachings in order to implement Tsutsui's sytem, because one of ordinary skill could have combined them with predictable results.

Regarding claim 4:

In Hajjar in view of Tsutsui, and further in view of Kusumoto, the error term generator is configured to calculate the error term for every new actuator control signal generated by the actuator control signal generator (Hajjar's apparatus always calculates uses the error term to generate the control signal).

Regarding claim 5:

In Hajjar in view of Tsutsui, and further in view of Kusumoto, the actuator control signal generator additionally comprises:

a coefficient generator to generate coefficients as a function of inputs comprising the adaptation coefficient and the error term (Hajjar: column 4, lines 37-57); and

a Fourier subroutine to generate the actuator control signal using the coefficients generated (Hajjar: column 45, lines 37-57).

Regarding claim 11:

In Hajjar in view of Tsutsui the baseline actuator control signal includes an AC component (it alternates based on the surface height deviations on the disk).

Regarding claims 14, 17, and 18:

A processor-readable medium comprising processor-executable instructions corresponding is inherent to Hajjar. Otherwise these claims are similar to claims 1, 4, and 5, and are rejected for the same reasons.

Regarding claim 23:

The instructions for setting the baseline actuator control signal comprises instructions for setting different baseline actuator control signals for different sectors of the disk (it is different wherever there is a surface deviation, so even though Hajjar does not specifically measure sector-by-sector the signal is inherently different in different sectors of the disk).

Regarding claims 25, 28, and 29:

These are method claims corresponding to the earlier system claims and are met when the system operates.

Regarding claims 35, 38, 39, and 43:

They are similar to the earlier claims, and are rejected for the same reasons.

6. Claims 2, 3, 15, 16, 26, 27, 36, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hajjar in view of Tsutsui, and further in view of Kusumoto, as applied to the claims above, and further in view of Shoda et al. (US 5,477,333).

Regarding claim 2:

Hajjar in view of Tsutsui, and further in view of Kusumoto, discloses a system as discussed above.

Hajjar in view of Tsutsui does not disclose "wherein the error term generator is configured to generate the error term using a FES signal as input."

Hajjar in view of Tsutsui, and further in view of Kusumoto, is trying to detect the surface height deviations of the disk (Hajjar: column 2, lines 10-11). Hajjar, and further in view of Kusumoto, does so by focusing the lens and then detecting the lens position, which is parallel to the disk. However, directly detecting the surface height deviations would be more efficient.

Shoda discloses a method of detecting the distance between a lens and a measured surface (abstract). The method involves detecting a focus error signal "which represents a difference between a distance of the object lens from the measured surface" (abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Hajjar in view of Tsutsui, and further in view of Kusumoto, as taught by Shoda to replace the focusing and lens position detecting steps of Hajjar with directly measuring the FES signal. The motivation would have been to simplify the measuring process, which would make it both more reliable and more efficient.

In Hajjar in view of Tsutsui, and further in view of Kusumoto, as modified by Shoda, the error term generator would be configured to generate the error term using a FES signal as input.

Regarding claim 3:

Hajjar discloses sampling the position sensor signal and using an A-to-D converter to produce the error term (column 5, lines 29-37); in Hajjar in view of Tsutsui, and further in view of Kusumoto, and further in view of Shoda, then, the error term generator is configured to sample the FES signal and use an A-to-D converter to produce the error term.

Regarding claims 15 and 16:

Hajjar in view of Tsutsui, , and further in view of Kusumoto, and further in view of Shoda inherently includes a processor-readable medium; all other elements of these claims have been discussed.

Regarding claims 26, 27, 36, and 37, they are similar to claims 2 and 3 and rejected for the same reasons.

7. Claims 1, 4, 9, 14, 17, 25, 28, 34, 35, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faucett (US 2002/0089906 A1) in view of Tsutsui, and further in view of Kusumoto.

Regarding claim 1:

Faucett discloses a system for establishing a baseline signal for application to an actuator within an optical disk drive to focus optics on an optical disk within the optical disk drive (paragraph 7), the system comprising:

an error term generator configured to generate an error term (paragraph 15);

an adaptation coefficient configured to regulate a rate at which the error term modifies an actuator control signal (there are several: for example term A in equation 3); and

an actuator control signal generator to generate the actuator control signal, wherein the actuator control signal is a function of a prior actuator position, the error term and the adaptation coefficient (equation 3).

Faucett does not disclose wherein the baseline actuator positioning routine is configured to "apply actuator control signals to the actuator to step the actuator full a full range of focus; obtain a SUM signal at each step, the SUM signal being a sum of signals received from a plurality of focus sensors; identify one of the obtained SUM signals; and set the baseline actuator control signal according to an applied actuator control signal which resulted in the identified one of the obtained SUM signals."

Tsutsui discloses that it is necessary to set a focus offset signal in order to achieve an optimum focusing condition (column 1, lines 59-65). Tsutsui discloses that to set this focus offset, the focus offset positioning routine must be configured to:

apply actuator control signals to the actuator to step the actuator through a full range of focus (column 10, lines 34-50);

obtain a RF signal at each step (column 14, lines 25-45);

identify one of the obtained RF signals (column 10, lines 34-50); and

set the baseline actuator control signal according to an applied actuator control signal which resulted in the identified one of the obtained RF signals (column 14, lines 50-65: "an optimum point can be...set")

Therefore, it would have been obvious to one of ordinary skill in the art to include in Faucett the configuration taught by Tsutsui, including all the steps listed above. The

motivation would have been to achieve an optimum focusing condition, as taught by Tsutsui.

Faucett in view of Tsutsui does not disclose:

wherein the RF signal is a SUM signal, the SUM signal being a sum of signals received from a plurality of focus sensors.

Kusumoto discloses:

An RF signal wherein the RF signal is a SUM signal, the SUM signal being a sum of signals received from a plurality of focus sensors (paragraph 72).

It would have been obvious to one of ordinary skill in the art to include in Hajjar in view of Tsutsui wherein the RF signal is a SUM signal, the SUM signal being a sum of signals received from a plurality of focus sensors.

The rationale is as follows:

Tsutsui discloses measuring the RF signal but does not disclose how the RF signal is obtained. Obtaining the RF signal is necessary for implementing the system of Tsutsui, and therefore necessary to implement Faucett in view of Tsutsui. Kusumoto discloses a means of obtaining an RF signal: it's obvious to combine these teachings in order to implement Tsutsui's sytem, because one of ordinary skill could have combined them with predictable results.

Regarding claim 4:

In Faucett in view of Tsutsui, and further in view of Kusumoto, the error term generator is configured to calculate the error term for every new actuator control signal generated by the actuator control signal generator (obvious from Faucett equation 3).

Regarding claim 9:

In Faucett in view of Tsutsui, and further in view of Kusumoto, the actuator control signal generator is configured, if an angular disk speed of the optical disk drive is sufficiently high, to shift a phase of terms within the actuator control signal to reduce actuator resonance (Faucett paragraph 28; the response time of the compensator can be improved – presumably necessary at a higher speed – but it shifts the phase of the actuator signal).

Regarding claims 14, 17, 25, 28, 34, 35, and 38:

They are similar to the earlier claims, and are rejected for the same reasons.

***Response to Arguments***

8. Applicant's arguments made in the appeal brief filed October 30th, 2007 have been considered but are moot in view of the new ground(s) of rejection.

Since Tsutsui is still relied upon in all of the new grounds of rejection, one of Applicant's arguments is still applicable to the new grounds of rejection.

Applicant argues that Tsutsui does not disclose stepping an actuator through "a full range of focus."

Applicant's specification, on page 8, lines 4-7, discloses: "The baseline actuator positioning routine 210 is configured to move the optics 114 through a full range of focus, i.e. from focusing too near to focusing too far away."

Therefore the specification defines "a full range of focus" as moving the actuator from focusing too near to focusing too far away.

This is precisely what Tsutsui discloses. See, for example, Fig. 7: in order to find the maximum RF signal, Tsutsui steps the actuator through a series of offsets. Since the in focus position is the maximum, Tsutsui begins at an out of focus (or focused "too near") position and steps through the offsets to a focused "too far" position, identifying the optimum position afterwards.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher R. Lamb whose telephone number is (571) 272-5264. The examiner can normally be reached on 9:00 AM to 6:30 PM Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CRL 1/15/08

/William Korzuch/
SPE, Art Unit 2627